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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/530,586

04/07/2005

Tsuyoshi Ichinose

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EXAMINER

SINCLAIR, DAVID M

ART UNIT

PAPER NUMBER

4125

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DELIVERY MODE

02/19/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/530,586	Applicant(s) ICHINOSE ET AL.	
	Examiner DAVID M. SINCLAIR	Art Unit 4125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/07/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-14 and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Machine Translation of JP2002-104878 hereafter referred to as MT '878.

In regards to claim 1,

MT '878 teaches a ceramic green sheet obtained by forming a ceramic coating containing at least a ceramic raw material powder, a binder, and an organic solvent (claim 1) in a sheet shape, followed by drying (claim 2), wherein the binder contains two or more kinds of polyvinyl acetal with different average degrees of polymerization (claim 1), polyvinyl acetal with a higher average degree of polymerization contains a relatively large amount of hydroxyl group, and polyvinyl acetal with a lower average degree of polymerization contains a relatively small amount of hydroxyl group (Table 1 - examples 2, 3, and 7).

In regards to claim 2,

MT '878 further teaches a difference in average degree of polymerization between the two or more kinds of polyvinyl acetal with different average degrees of polymerization is not less than 300 (Table 1 – examples 1-7).

In regards to claim 3,

MT '878 further teaches the amount of the hydroxyl group in the polyvinyl acetal with a lower average degree of polymerization is less than 25 mol% of a total amount of functional groups contained in the polyvinyl acetal with a lower degree of polymerization (Table 1 – examples 2-3 and 7).

In regards to claim 4,

MT '878 further teaches the amount of the hydroxyl group in the polyvinyl acetal with a higher average degree of polymerization is not less than 25 mol% of a total amount of functional groups contained in the polyvinyl acetal with a higher degree of polymerization (Table 1 – examples 2-3 and 7).

In regards to claim 5,

MT '878 further teaches the polyvinyl acetal with a lower average degree of polymerization has an average degree of polymerization of not more than 600 (Table 1 – examples 1-7).

In regards to claim 6,

MT '878 further teaches the polyvinyl acetal with a higher average degree of polymerization has an average degree of polymerization of not less than 900 (Table 1 – examples 1-7).

In regards to claim 7,

MT '878 further teaches an amount of the polyvinyl acetal with a lower average degree of polymerization is in a range of 10 to 90 wt% of a total amount of the binder included in the ceramic green sheet, and an amount of the polyvinyl acetal with a higher average degree of polymerization is in a range of 90 to 10 wt% of the total amount of the binder included in the ceramic green sheet ([0033]-[0035]).

In regards to claim 8,

MT '878 further teaches of the two or more kinds of polyvinyl acetal with different average degrees of polymerization, the polyvinyl acetal with a higher average degree of polymerization has a relatively high glass transition temperature, and the polyvinyl acetal with a lower average degree of polymerization has a relatively low glass transition temperature (glass transition temperature (T_g) is determined by the degree of polymerization, the acetyl mol%, and hydroxyl group mol %; Table 1 – examples 2-3 and 7 would meet the limitation based off the properties given in the table; example 2 – T_g of the lower average degree of

Art Unit: 4125

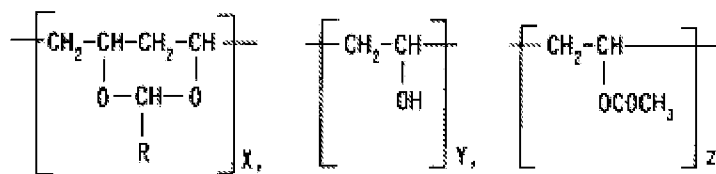
polymerization $\sim 60^{\circ}\text{C}$ and T_g of the higher average degree of polymerization $\sim 69^{\circ}\text{C}$).

In regards to claim 9,

MT '878 further teaches a difference in glass transition temperature between the polyvinyl acetal with a higher average degree of polymerization and the polyvinyl acetal with a lower average degree of polymerization of the two or more kinds of polyvinyl acetal with different average degrees of polymerization is not less than 5°C (glass transition temperature (T_g) is determined by the degree of polymerization, the acetyl mol%, and hydroxyl group mol %; Table 1 – examples 2-3 and 7 would meet the limitation based off the properties given in the table; example 2 – T_g of the lower average degree of polymerization $\sim 60^{\circ}\text{C}$ and T_g of the higher average degree of polymerization $\sim 69^{\circ}\text{C}$).

In regards to claim 10,

MT '878 further teaches wherein each of the two or more kinds of polyvinyl acetal is a random polymer represented by the following Formula 1 (where $0 < X < 100$; $0 < Y < 100$; $0 < Z < 100$; $X + Y + Z = 100$ mol%; R is an alkyl group having a carbon number of 1 to 6).



(Formula 1)

Art Unit: 4125

(The above general formula is a property of the polyvinyl acetal resin taught by MT '878.)

In regards to claim 11,

MT '878 further teaches in the Formula 1, R of an acetal group in the polyvinyl acetal with a lower degree of polymerization is C_3H_7 (the use of n-butylaldehyde as the aldehyde meets the above limitation).

In regards to claim 12,

MT '878 further teaches in the Formula 1, R of an acetal group in the polyvinyl acetal with a higher degree of polymerization is CH_3 or C_3H_7 (the use of n-butylaldehyde as the aldehyde meets the above limitation).

In regards to claim 13,

MT '878 further teaches a content of acetyl group in the polyvinyl acetal with a lower degree of polymerization is not less than 3 mol% of a total amount of functional groups contained in the polyvinyl acetal with a lower degree of polymerization ([0017]).

In regards to claim 14,

MT '878 further teaches a content of acetyl group in the polyvinyl acetal with a higher degree of polymerization is not less than 3 mol% of a total amount of

functional groups contained in the polyvinyl acetal with a higher degree of polymerization ([0017]).

In regards to claims 16 and 18,

MT '878 teaches a laminated ceramic article obtained by producing a ceramic coating containing at least a ceramic raw material powder, a binder, and an organic solvent, forming the obtained ceramic coating in a sheet shape, followed by drying, whereby a ceramic green sheet is produced, and producing a laminate using the ceramic green sheet and an inner electrode sheet or producing a laminate using the ceramic green sheet on which an inner electrode is formed, followed by binder-removing and firing ([0002]-[0003]), a ceramic green sheet obtained by forming a ceramic coating containing at least a ceramic raw material powder, a binder, and an organic solvent (claim 1) in a sheet shape, followed by drying (claim 2), wherein the binder contains two or more kinds of polyvinyl acetal with different average degrees of polymerization (claim 1), polyvinyl acetal with a higher average degree of polymerization contains a relatively large amount of hydroxyl group, and polyvinyl acetal with a lower average degree of polymerization contains a relatively small amount of hydroxyl group (Table 1 - examples 2, 3, and 7).

In regards to claim 17,

MT '878 further teaches the laminated ceramic article is a laminated ceramic capacitor ([0003] – a condenser is a capacitor).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over MT '878 in view of Kazunobu et al. (JP4088699).

The reference as applied above teaches all the limitations of claim 15 except a porous ceramic sheet with a porosity of 20 to 60 vol%.

Kazunobu '699 teaches a porous ceramic sheet with a porosity of 20 to 60 vol% (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to try the porosity of Kazunobu '699 with the ceramic green sheet of MT '878 to obtain a ceramic sheet which is high in bending strength as taught by Kazunobu '699 (abstract).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ohno et al. (6,428,644) teaches a ceramic green sheet with a porosity of 20%.

Nguyen (5,529,869) teaches a polyvinyl acetal with the general formula of Formula 1 (column 7 – lines 21-30 & 58-65).

Formvar Resin teaches the general formula of polyvinyl acetal resin being that of Formula 1.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID M. SINCLAIR whose telephone number is (571)270-5068. The examiner can normally be reached on Mon - Thurs 6:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CHARLES D. GARBER can be reached on (571) 272-2194. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 4125

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. M. S./
Examiner, Art Unit 4125

/Charles D. Garber/
Supervisory Patent Examiner, Art Unit 4125